HarborSym
An Effort at Glass Box Modeling

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IWR Modeling Philosophy

- Transparency
- Portability
- Ease of Use

Glass Box Features

- User Interface
- Visualization- for stakeholders to see inside
- Visualization- testing, for analyst to see inside

User Interface

- Easily input data
- Clearly see what data is driving the model
- Easily test sensitivities, make adjustments
- Easily compare alternatives

HarborSym - [Study Explorer]

File View Import Output Window Help

Navigation Pane

- Port
  - RMM Original
    - Vessel Info
    - Commodity Info
    - Port Structures
      - Topologic Po
      - Bars
      - Docks
      - Facilities
      - Entry/Exit Poi
      - Reaches
        - Egmont
        - Mullet Ke
        - Tampa B
          - Spee
          - Reac
        - Tampa B
        - Port Man
        - Port Man
        - Tampa B
        - Tampa B
        - Tampa B
        - Tampa B
        - Gadsden
        - Hillsboro
        - Big Bend
        - Big Bend
        - Hillsboro
        - Alafia Ch
        - Alafia Ch
        - Hillsboro
        - Port Sutt
        - Port Sutt
        - Port Sutt
        - East Bay
        - East Bay
        - Hillsboro
        - Hillsboro
        - Sparkma
        - Sparkma

Graphics Pane

Reach | Speed In Reach | Transit Rule

Number	Origin	Destination	Length	Width	Depth	Description	Type	Depth Outside Channel	Reach Safety Zone A
1	156	157	26400	700		Egmont Bar Chan	0	6	
2	157	158	7421	700	45	Mullet Key Chann	0	6	
4	159	160	23118	600	43	Tampa Bay Chan	0	6	
5	160	161	13985	500	43	Tampa Bay Chan	0	6	
6	161	162	10952	400	40	Port Manatee Cha	0	6	

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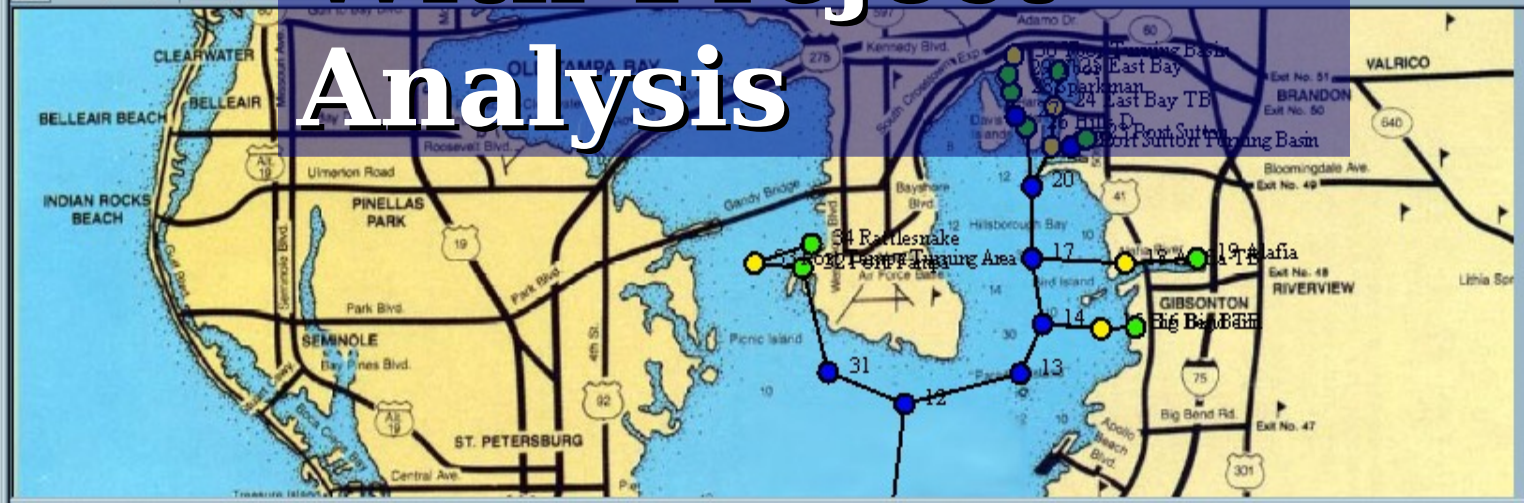
With-Project Analysis

File View Import Output Window Help

Navigati...

- Port
  - RMM
    - V
    - C
    - P

Graphics Pane



Reach | Speed In Reach | Transit Rule

Number	Origin	Destination	Length	Width	Depth	Description	Type	Depth Outside Channel	Reach Safety Zone Active
1	156	157	26400	700	45	Egmont Bar Chan	0	6	☐
2	157	158	7421	700	45	Mullet Key Chann	0	6	☐
4	159	160	23118	600	43	Tampa Bay Chan	0	6	☐
5	160	161	13985	500	43	Tampa Bay Chan	0	6	☐
6	161	162	10952	400	40	Port Manatee Cha	0	6	☐
7	162	163	1320	400	40	Port Manatee Cha	0	6	☐
8	161	164	19408	500	43	Tampa Bay Chan	0	6	☐
9	164	165	11416	500	43	Tampa Bay Chan	0	6	☐
10	165	166	11131	500	43	Tampa Bay Chan	0	6	☐
11	166	167	9704	500	43	Tampa Bay Chan	0	6	☐
12	167	168	14270	500	43	Gadsden Pointe	0	6	☐
13	168	169	9418	500	43	Hillsborough Cut	0	6	☑
14	169	170	8384	200	35	Big Bend Channel	0	6	☐
15	170	171	1320	200	35	Big Bend Channel	0	6	☐
16	169	172	11416	500	43	Hillsborough Cut	0	6	☐
17	172	173	12950	200	30	Alafia Channel to	0	6	☐
18	173	174	1320	200	30	Alafia Channel to	0	6	☐
19	172	175	18551	500	43	Hillsborough Cut	0	6	☐

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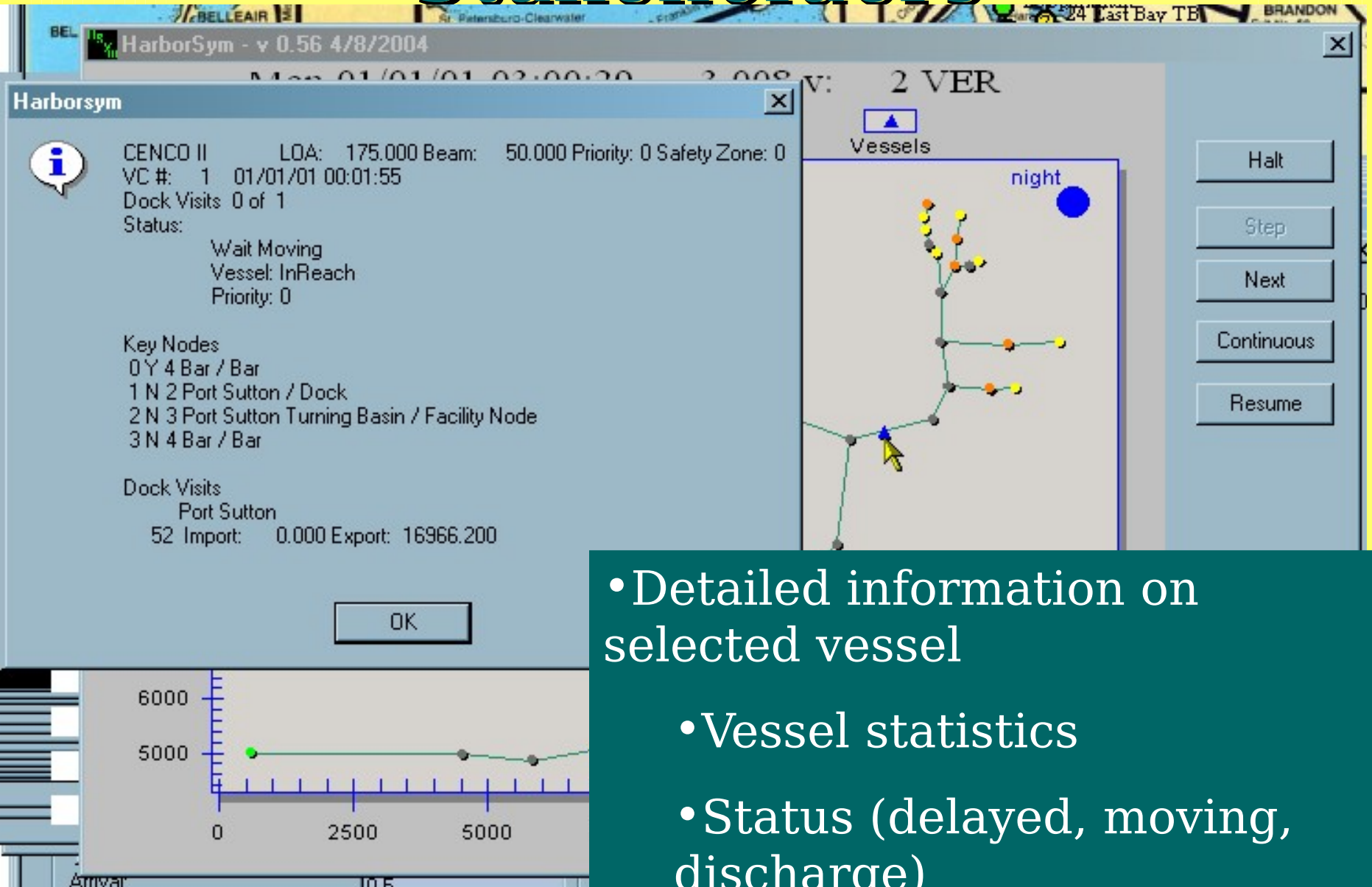
Visualization- Stakeholders

- Use the visualization to explain the outputs (reviewers, sponsor)
- Visualization to help explain data needs (Pilots)
- Visualization to elicit feedback on functionality (Port operators)

Visualization-Stakeholders

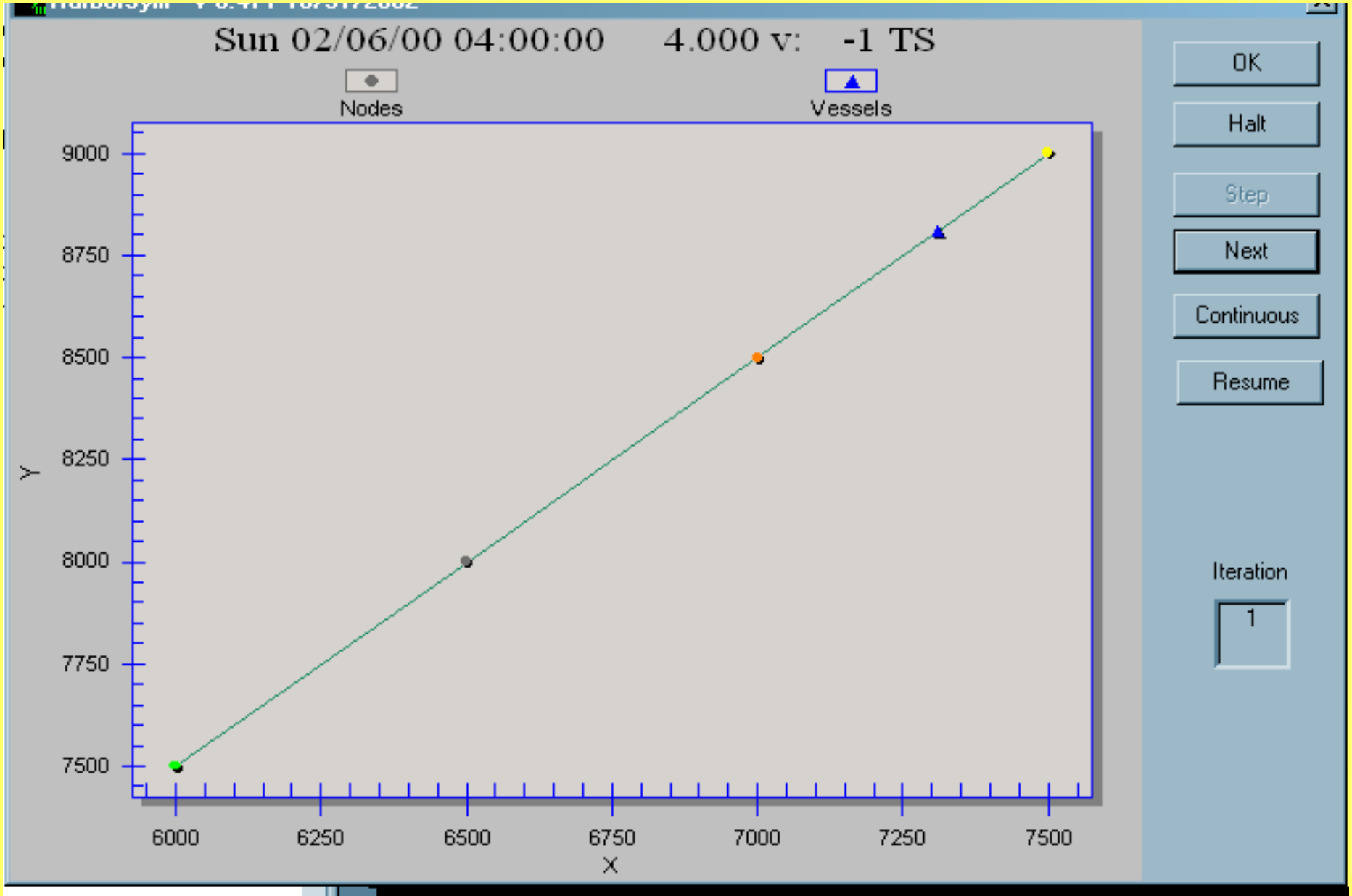


- Detailed information on selected vessel
  - Vessel statistics
  - Status (delayed, moving, discharge)

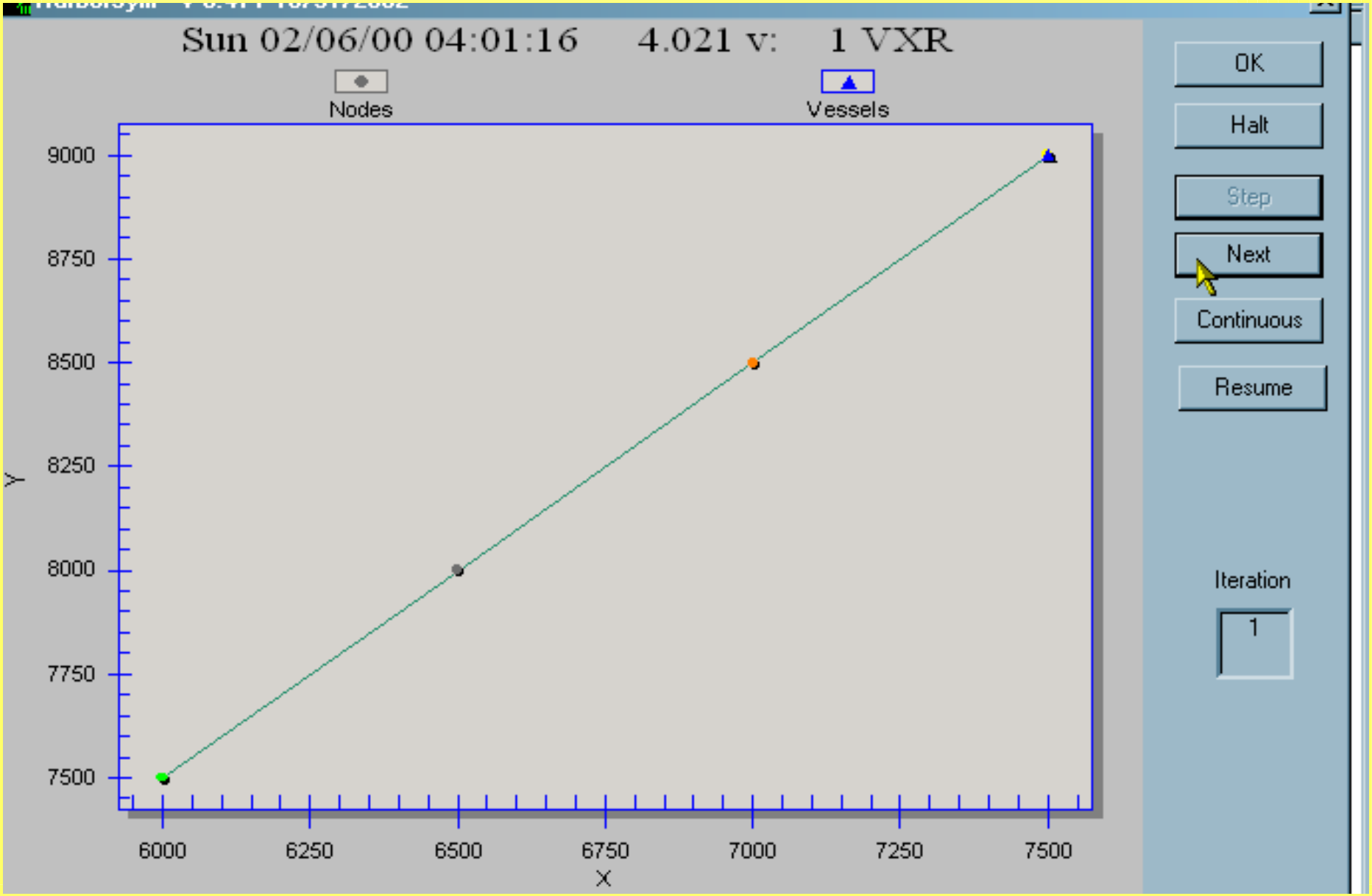
Visualization- Testing

- Visualization (animation) to test model functionality
- Can clearly determine if vessels are moving properly

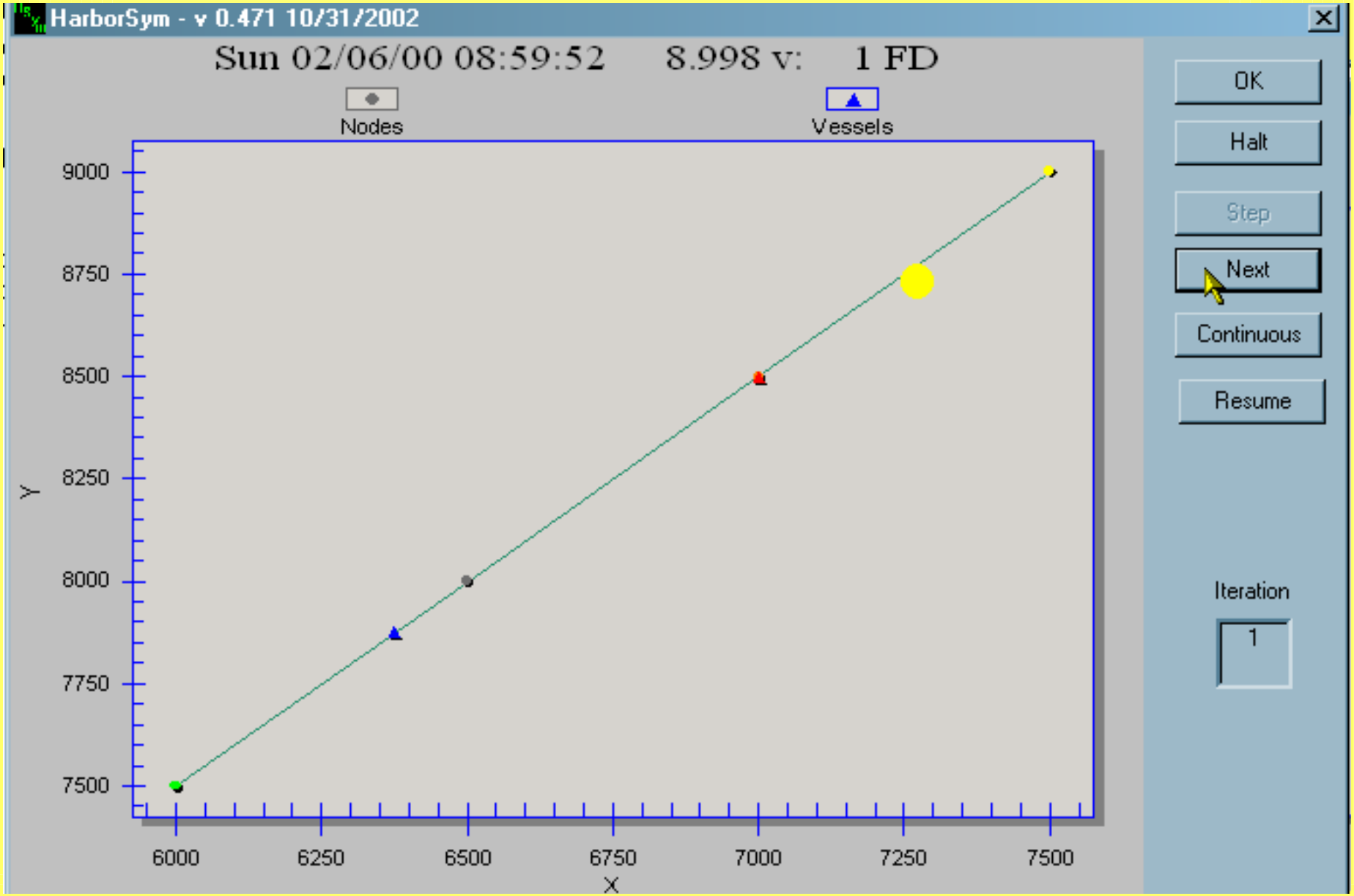
Running Simple Tests



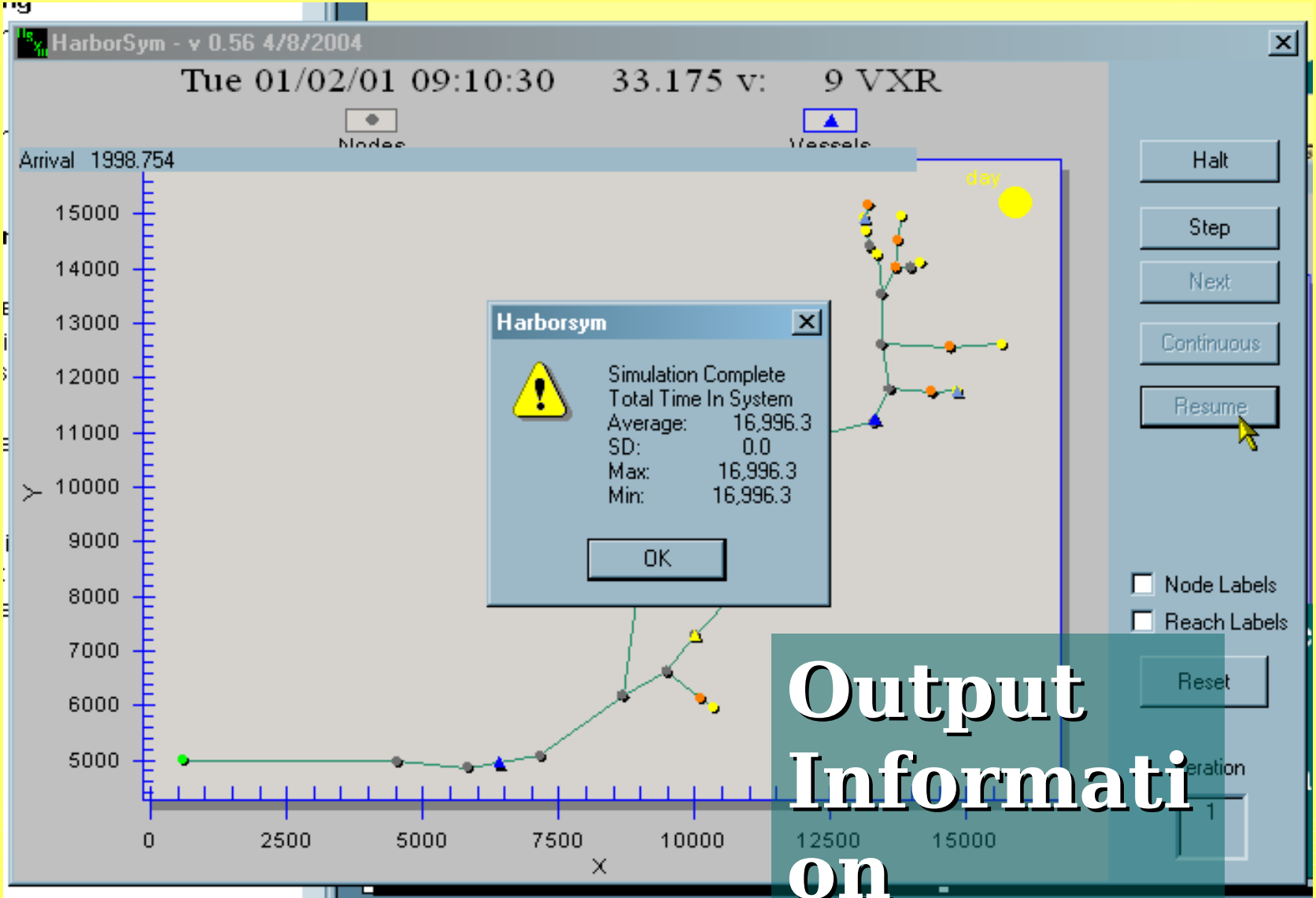
Running Simple Tests



Running Simple Tests



Visualization- Testing



Detailed Output

Simulation Output

	N	Average	SD	Max	Min
# in Call List	1	2	0	2	2
# Vessels Generated	1	0	0	0	0
# Vessels Exiting	1	2	0.0	2.0	2.0
Avg Ves Time in System	2	12.3	1.6	13.5	11.2
Tot Vessel Cost (000)	1	22.1	0.0	22.1	22.1
Avg Vessel Cost (000)	2	11.0	1.4	12.1	10.0
Avg Ves Time Waiting	2	0.8	1.1	1.5	0.0
Avg Ves Time Reaches	2	8.0	0.0	8.0	8.0
Avg Ves Time Loading	2	1.5	0.7	2.0	1.0
Avg Ves Time TB	2	0.0	0.0	0.0	0.0
Avg Ves Time Docking	2	1.5	0.0	1.5	1.4
Avg Ves Time Undocking	2	0.6	0.1	0.7	0.5
Avg Ves Time Wait Entry	2	0.0	0.0	0.0	0.0
Avg Ves Time Wait Dock	2	0.1	0.1	0.1	0.0
Avg Ves Time Waiting TB	2	0.0	0.0	0.0	0.0
Avg Ves Time Waiting FN	2	0.7	1.0	1.4	0.0
Total Time in System	1	24.7	0.0	24.7	24.7
Total Commodity	1	30.0	0.0	30.0	30.0
Tot Commodity/Tot Time	1	1.2	0.0	1.2	1.2
Total Wait in System	1	1.5	0.0	1.5	1.5
Time in Reaches	1	16.0	0.0	16.0	16.0
Time Docking	1	2.9	0.0	2.9	2.9
Time UnDocking	1	1.2	0.0	1.2	1.2
Time Loading	1	3.0	0.0	3.0	3.0
Time in TB	1	0.0	0.0	0.0	0.0
Wait at Entry	1	0.0	0.0	0.0	0.0
Wait at Dock	1	0.1	0.0	0.1	0.1
Wait at TB	1	0.0	0.0	0.0	0.0
Wait at FN	1	1.4	0.0	1.4	1.4

Reach Rule Violation Statistics

Questions
Discussion